



*AT-MC101XL
AT-MC102XL
AT-MC103XL
AT-MC103LH
AT-MC103SC/FSx
AT-MC103ST/FSx*

Fast Ethernet Media Converters

Version 3

Installation Guide

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960 Stewart Drive Suite B, Sunnyvale CA 94086 USA

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Electrical Safety and Emission Compliance

Standards: This product meets the following standards.

U.S. Federal Communications Commission

Declaration Of Conformity

Manufacture Name:	Allied Telesyn, Inc.
Manufacture Address:	960 Stewart Drive, Suite B Sunnyvale, CA 94086 USA
Manufacture Telephone:	408-730-0950
Declares that the Product:	Fast Ethernet Media Converters
Model Numbers:	AT-MC101XL, AT-MC102XL, AT-MC103XL, AT-MC103LH, AT-MC103SC/FS3, AT-MC103ST/FS3, AT-MC103SC/FS4, AT-MC103ST/FS4

This product complies with FCC Part 15B, Class B Limits:

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device must not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

Radiated Energy

Note: This equipment has been tested and found to comply with the limits for a Class B digital device pursuant to Part 15 of FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with instructions, may cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on; the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and the receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

Changes and modifications not expressly approved by the manufacturer or registrant of this equipment can void your authority to operate this equipment under Federal Communications Commission rules.

Warning: This product requires only Category 3, 4, or 5 shielded twisted-pair cable for all 10 Mbps RJ-45 connections, and Category 5 shielded twisted-pair for all 100 Mbps RJ-45 connections to comply with Class B emission limits. If not used with shielded cables, this product may cause radio interference in which case the user may be required to take adequate measures to reduce interference levels.

Industry Canada

This Class B digital apparatus meets all requirements of the Canadian Interference-Causing Equipment Regulations.

Cet appareil numérique de la classe B respecte toutes les exigences du Règlement sur le matériel brouilleur du Canada.

RFI Emission

EN55022 Class B  1

Immunity

EN50082-1 1997  2

Warning: This product requires shielded cables to comply with emission and immunity standards. If it is used with unshielded cables, the user may be required to take measures to correct the interference problem at their own expense.  3

Electrical Safety

EN60950 (TUV), UL1950, (_cUL_{us})  4

Laser

EN60825  5

USA/Canada

Use a UL Listed/CSA Certified AC adapter of DC 12V, 500mA.

Europe - EU

Use TÜV licensed AC adapter of DC 12V, 500mA.

UK

Use a UK Safety Approved AC adapter of DC 12V, minimum 500mA.

Important: Appendix A contains translated safety statements for installing this equipment. When you see the , go to Appendix A for the translated safety statement in your language.

Wichtig: Anhang A enthält übersetzte Sicherheitshinweise für die Installation dieses Geräts. Wenn Sie  sehen, schlagen Sie in Anhang A den übersetzten Sicherheitshinweis in Ihrer Sprache nach.

Vigtigt: Tillæg A indeholder oversatte sikkerhedsadvarsler, der vedrører installation af dette udstyr. Når De ser symbolet , skal De slå op i tillæg A og finde de oversatte sikkerhedsadvarsler i Deres eget sprog.

Belangrijk: Appendix A bevat vertaalde veiligheidsopmerkingen voor het installeren van deze apparatuur. Wanneer u de  ziet, raadpleeg Appendix A voor vertaalde veiligheidsinstructies in uw taal.

Important: L'annexe A contient les instructions de sécurité relatives à l'installation de cet équipement. Lorsque vous voyez le symbole , reportez-vous à l'annexe A pour consulter la traduction de ces instructions dans votre langue.

Tärkeää: Liite A sisältää tämän laitteen asentamiseen liittyvät käännettyt turvaohjeet. Kun näet -symbolin, katso käännettyä turvaohjetta liitteestä A.

Importante: l'Appendice A contiene avvisi di sicurezza tradotti per l'installazione di questa apparecchiatura. Il simbolo , indica di consultare l'Appendice A per l'avviso di sicurezza nella propria lingua.

Viktig: Tillegg A inneholder oversatt sikkerhetsinformasjon for installering av dette utstyret. Når du ser , åpner du til Tillegg A for å finne den oversatte sikkerhetsinformasjonen på ønsket språk.



Power to the hub must be sourced only from the adapter.  10



Use a UL Listed/CSA Certified AC adapter of DC 12V, 500mA.

Europe - EU

Use TÜV licensed AC adapter of DC 12V, 500mA.

UK

Use a UK Safety Approved AC adapter of DC 12V, minimum 500mA.

Important: Appendix A contains translated safety statements for installing this equipment. When you see the , go to Appendix A for the translated safety statement in your language.

Wichtig: Anhang A enthält übersetzte Sicherheitshinweise für die Installation dieses Geräts. Wenn Sie  sehen, schlagen Sie in Anhang A den übersetzten Sicherheitshinweis in Ihrer Sprache nach.

Vigtigt: Tillæg A indeholder oversatte sikkerhedsadvarsler, der vedrører installation af dette udstyr. Når De ser symbolet , skal De slå op i tillæg A og finde de oversatte sikkerhedsadvarsler i Deres eget sprog.

Belangrijk: Appendix A bevat vertaalde veiligheidsopmerkingen voor het installeren van deze apparatuur. Wanneer u de  ziet, raadpleeg Appendix A voor vertaalde veiligheidsinstructies in uw taal.

Important: L'annexe A contient les instructions de sécurité relatives à l'installation de cet équipement. Lorsque vous voyez le symbole , reportez-vous à l'annexe A pour consulter la traduction de ces instructions dans votre langue.

Tärkeää: Liite A sisältää tämän laitteen asentamiseen liittyvät käännettyt turvaohjeet. Kun näet -symbolin, katso käännettyä turvaohjetta liitteestä A.

Importante: l'Appendice A contiene avvisi di sicurezza tradotti per l'installazione di questa apparecchiatura. Il simbolo , indica di consultare l'Appendice A per l'avviso di sicurezza nella propria lingua.

Viktig: Tillegg A inneholder oversatt sikkerhetsinformasjon for installering av dette utstyret. Når du ser , åpner du til Tillegg A for å finne den oversatte sikkerhetsinformasjonen på ønsket språk.

Importante: O Anexo A contém advertências de segurança traduzidas para instalar este equipamento. Quando vir o símbolo , leia a advertência de segurança traduzida no seu idioma no Anexo A.

Importante: El Apéndice A contiene mensajes de seguridad traducidos para la instalación de este equipo. Cuando vea el símbolo , vaya al Apéndice A para ver el mensaje de seguridad traducido a su idioma.

Obs! Bilaga A innehåller översatta säkerhetsmeddelanden avseende installationen av denna utrustning. När du ser , skall du gå till Bilaga A för att läsa det översatta säkerhetsmeddelandet på ditt språk.

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Welcome to Allied Telesyn

This guide contains instructions on how to install an AT-MC100 Series Fast Ethernet Media Converter.

Where to Find Web-based Guides

The Allied Telesyn web site at **www.alliedtelesyn.com** offers you an easy way to access the most recent documentation, software, and technical information for all of our products. For product guides, select “Support & Services” from our web site.

Document Conventions

This guide uses the following conventions:

Note

Notes provide additional information.



Caution

Cautions indicate that performing or omitting a specific action may result in equipment damage or loss of data.



Warning

Warnings indicate that performing or omitting a specific action may result in bodily injury.

Contacting Allied Telesyn Technical Support

You can contact Allied Telesyn technical support online or by telephone or e-mail.

Online Support

You can request technical support online by accessing the Knowledge Base at <http://kb.alliedtelesyn.com>. You can use the Knowledge Base to submit questions to our technical support staff and review answers to previously asked questions.

Telephone Support

For technical support by telephone, contact Allied Telesyn at one of the following locations:

Americas

United States, Canada, Mexico,
Central America, South America
Tel: 1 (800) 428-4835

Asia

Singapore, Taiwan, Thailand,
Malaysia, Indonesia, Korea,
Philippines, China, India, Hong Kong
Tel: (+65) 3815-612

Australia

Tel: 1 (800) 000-880

France

Belgium, Luxembourg, The
Netherlands, Middle East, Africa
Tel: (+33) 0-1-60-92-15-25

Germany

Switzerland, Austria, Eastern Europe
Tel: (+49) 30-435-900-126

Italy

Spain, Portugal, Greece, Turkey, Israel
Tel: (+39) 02-41-30-41

Japan

Tel: (+81) 3-3443-5640

United Kingdom

Denmark, Norway, Sweden, Finland
Tel: (+0044) 1235-442500

E-mail Support

Latin America, Mexico, Puerto Rico, Caribbean, and Virgin Islands
latin_america@alliedtelesyn.com

Europe

support_europe@alliedtelesyn.com

Returning Products

Products for return or repair must first be assigned a Return Materials Authorization (RMA) number. A product sent to Allied Telesyn without a RMA number will be returned to the sender at the sender's expense.

To obtain an RMA number, contact Allied Telesyn's Technical Support at one of the following locations:

North America

Toll-free: 1-800-762-1664
Fax: 1-425-806-1050

Latin America, the Caribbean, Virgin Islands

Tel: international code + 425-481-3852
Fax: international code + 425-481-3895

Mexico

Toll-free: 800-424-5012, ext 3852
Fax: international code+425-481-3895

Australia

Toll-free: 1-800-000-880
Fax: +61-2-9438-4966

Europe, Africa, and the Middle East

Tel: +44-1793-501401
Fax: +44-1793-431099

Puerto Rico

Tel: 1-800-424-5012, ext 3852 or
1-800-424-4284, ext 3852

Asia and South America

Tel: +65-381-5612
Fax: +65-383-3830

New Zealand

Toll-free: 0800-45-5782

Management Software Updates

New releases of management software for our managed products can be downloaded from our web site at www.alliedtelesyn.com or our FTP server at ftp.alliedtelesyn.com. To use the FTP server, enter 'anonymous' for the user name and your e-mail address for the password.

For Sales or Corporate Information

You can contact Allied Telesyn for sales or corporate information at the location below:

Allied Telesyn, Inc.

19800 North Creek Parkway, Suite 200
Bothell, WA 98011
Tel: 1 (425) 487-8880
Fax: 1 (425) 489-9191

Tell Us What You Think

If you have any comments or suggestions on how we might improve this or other Allied Telesyn documents, please fill out the General Enquiry Form online. This form can be accessed by selecting “Contact Us” from www.alliedtelesyn.com.

Chapter 1

Overview

The AT-MC100 Series Fast Ethernet Media Converters include the following models:

- AT-MC101XL
- AT-MC102XL
- AT-MC103XL
- AT-MC103LH
- AT-MC103SC/FS3
- AT-MC103ST/FS3
- AT-MC103SC/FS4
- AT-MC103ST/FS4

The AT-MC100 Series Fast Ethernet Media Converters are designed to extend the distance of your network by interconnecting LAN devices that are physically separated by large distances. Each media converter features a 100Base-TX twisted pair port and a 100Base-FX fiber optic port. The twisted pair port has an RJ-45 connector and a maximum operating distance of 100 meters (328 feet). The fiber optic port has an ST or SC connector and a maximum operating distance of 2 kilometers (1.2 miles) to 100 kilometers (62 miles), depending on the model. These units operate at 100 Mbps and feature half- and full-duplex operation.

The media converters can be installed on a desktop or in an AT-MCR12 chassis. The AT-MC100 Series Media Converters are easy to install and do not require any software configuration or management. Figure 1 shows an example of an AT-MC100 Series Media Converter.

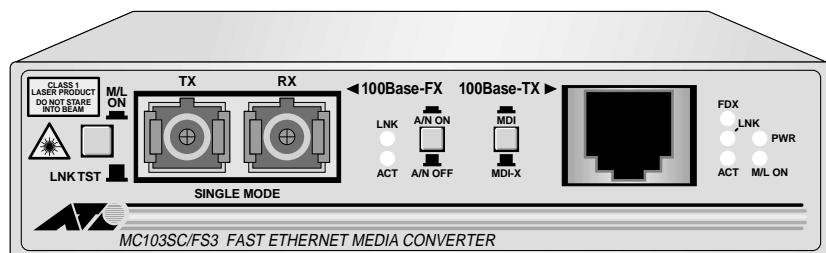


Figure 1 AT-MC103SC/FS3 Model

Table 1 lists the maximum operating distances for the media converters.

Table 1 Maximum Operating Distances

Model	Type of Connector		Maximum Operating Distance	
	100Base-FX	100Base-TX	100Base-FX ¹	100Base-TX
AT-MC101XL	ST	RJ-45	2 km (1.2 mi)	100 m (328 ft)
AT-MC102XL	SC	RJ-45	2 km (1.2 mi)	100 m (328 ft)
AT-MC103XL	SC	RJ-45	15 km (9.3 mi)	100 m (328 ft)
AT-MC103LH	SC	RJ-45	40 km (24.8 mi)	100 m (328 ft)
AT-MC103SC/FS3	SC	RJ-45	75 km (46.5 mi)	100 m (328 ft)
AT-MC103ST/FS3	ST	RJ-45	75 km (46.5 mi)	100 m (328 ft)
AT-MC103SC/FS4	SC	RJ-45	100 km (62 mi)	100 m (328 ft)
AT-MC103ST/FS4	ST	RJ-45	100 km (62 mi)	100 m (328 ft)

1. Maximum distance may be less depending on the duplex mode of the end stations and the type of fiber optic cabling used with the port.

Key Features

The media converters have the following key features:

- LEDs for unit and port status
- MDI/MDI-X button
- Link Test/MissingLink™ button for performing a link test and activates the MissingLink feature which notifies end-nodes of connection failures
- 100Base-TX twisted pair port operates in half- or full-duplex mode
- 100Base-FX fiber optic port operates in half- or full-duplex mode
- External AC/DC power adapter
- Standard size for use in an AT-MCR12 chassis

Status LEDs

Table 2 defines the media converter's LEDs.

Table 2 Status LEDs

LED	State	Color	Description
PWR	ON	Green	Power is applied to the media converter.
LNK	ON	Green	A link has been established on the port.
ACT	ON	Green	Data is being received on the port.
FDX	ON	Green	The port is operating in full-duplex mode.
	OFF		The port is operating in half-duplex mode.
M/L ON	ON	Green	The MissingLink feature is activated on the media converter.
	OFF		The MissingLink feature is disabled and the media converter is operating in the link test mode.

MDI/MDI-X Button

An RJ-45 port on a 100 Mbps Ethernet network device can have one of two possible wiring configurations: MDI or MDI-X. The RJ-45 port on a PC, router or bridge is typically wired as MDI, while the twisted pair port on a switch or hub is usually MDI-X.

To connect two 100 Mbps network devices together that have dissimilar port wiring configurations, such as MDI to MDI-X, you use a straight-through cable. To connect two network devices that have an RJ-45 port with the same wiring configuration, such as MDI to MDI, you use a crossover cable.

The RJ-45 port on the media converter features an MDI/MDI-X button. You can use this button to configure the twisted pair port on the media converter as either MDI or MDI-X. This feature allows you to use a straight-through cable regardless of the type of end-node connected to the port.

Note

After using the MDI/MDI-X button to change between the two settings, you must reset the media converter by powering OFF then powering ON the unit.

Link Test/MissingLink Button

The Link Test/MissingLink button allows you to perform a link test on the ports on the media converter. This button also allows you to activate the MissingLink feature on the unit. Both features are described in the following section.

Note

After using the Link Test/MissingLink button to select between the two settings, you must reset the media converter by powering OFF then powering ON the unit

Link Test. The link test is a fast and easy way for you to test the connections between the ports on the media converter and the nodes that are connected to the ports. If a network problem occurs, you can perform a link test to determine which port is experiencing a problem, and be able to focus on the port and end-node where the problem resides.

A link test is performed when the button is in the LNK TST (OUT) position. For instructions on performing a link test, refer to “Troubleshooting” on page 15.

Note

Leaving the media converter in the LNK TST (OUT) position will not interfere with the unit's ability to pass network traffic. Leaving the unit in this position will ensure that after a network recovery, the media converter will automatically resume passing network traffic.

MissingLink. The MissingLink feature enables the fiber optic ports on the media converter to pass the “Link” status of their connections to each other. When the media converter detects a problem with one of the ports, such as the loss of connection to an end-node, the media converter shuts down the connection to the other port, thus notifying the node that the connection has been lost.

For example, if the twisted pair cable to the 100Base-TX port on the media converter were to fail, the media converter would respond by dropping the link on the 100Base-FX fiber optic port. In this way, the media converter notifies the end-node connected to the fiber optic port that the connection on the twisted pair port has been lost. If the failure had started with the fiber optic cabling, the unit would drop the link to the twisted pair port.

The value to this type of network monitoring and fault notification is that some hubs and switches can be configured to take a specific action in the event of the loss of connection on a port. In some cases, the unit can be configured to seek a redundant path to a disconnected node or send out a trap to a network management station, and so alert the network administrator of the problem.

Note

The MissingLink feature is disabled when you perform a link test with the Link Test/MissingLink button. Consequently, to ensure that the MissingLink feature is activated on the media converter, always set the button to the M/L ON (IN) position during normal network operations. However, if left in this position and there is a network failure, after recovery you must physically set the unit to LNK TST (OUT) then back to M/L ON (IN) for the media converter to resume passing network traffic.

Auto-negotiation Button

The auto-negotiation button, located on the front panel, disables the auto-negotiation feature (IEEE 802.3u) of the media converter. The media converter uses auto-negotiation to determine the duplex mode of the ports. The duplex mode refers to the manner in which an end-node sends and receives data on the network. An end-node can operate in either half- or full-duplex mode. A node operating in half-duplex can either send or receive data, but not both at the same time. An end-node operating in full-duplex can send and receive data simultaneously. The best network performance is achieved when an end-node can operate in full-duplex mode.

In most configurations, you will want to leave the auto-negotiation button activated so the unit can determine the appropriate duplex mode, based on the capabilities of the end-nodes. For example, the auto-negotiation feature on the media converter should be left activated in situations where both end-nodes are also capable of auto-negotiation, or where both end-nodes have been preset to the same mode or are capable of operating in only one duplex mode, such as half-duplex.

Note

After a configuration change, you must reset the media converter by powering OFF then powering ON the unit

There is one situation where it may be necessary to disable the auto-negotiation feature, and that is to prevent a mismatch from occurring between the duplex modes of the end-nodes. For example, Figure 2 shows two units that have been connected with a media converter. Unit 1 is a repeater that is capable of operating in half-duplex mode only. Unit 2 is a switch that can operate in either half- or full-duplex mode, and will auto-negotiate the duplex mode.

In attempting to auto-negotiate with Unit 1, the media converter will determine that the unit is capable of half-duplex only and will set the port connected to the unit appropriately. In auto-negotiating with Unit 2, the media converter will determine that the unit can manage full-duplex and will set the port connected to the unit to full-duplex. The result is a mismatch, with one unit operating in half-duplex and the other unit operating in full-duplex. This is referred to as a classic duplex mode mismatch and will result in poor network performance between the end-nodes.

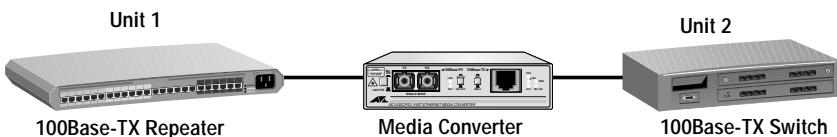


Figure 2 Example of a Duplex Mode Mismatch

You can resolve the mismatch in one of two ways:

- Manually configure Unit 2, if possible, so that the port connected to the media converter is set to half-duplex.
- Disable auto-negotiation on the media converter using the auto-negotiation button. With auto-negotiation on the media converter disabled, Unit 2 will assume that the converter is capable of only half-duplex operation, thus eliminating the mismatch in duplex modes between the end-nodes.

External AC/DC Power Adapter

An external AC/DC power adapter is included with the media converter for standalone operation. The power adapter supplies 12V DC to the media converter. Allied Telesyn supplies an approved safety compliant AC power adapter for the 120 and 240V AC versions with an unregulated output of 12V DC at 1 A. The power required for the media converter is 12V DC, 500 mA.

Network Topologies

The AT-MC100 Series Media Converters can be used in two different types of topologies: standalone and back-to-back. Both topologies are described below.

Standalone Topology

Figure 3 illustrates a standalone topology where two AT-8224XL switches have been interconnected with an AT-MC102XL media converter.

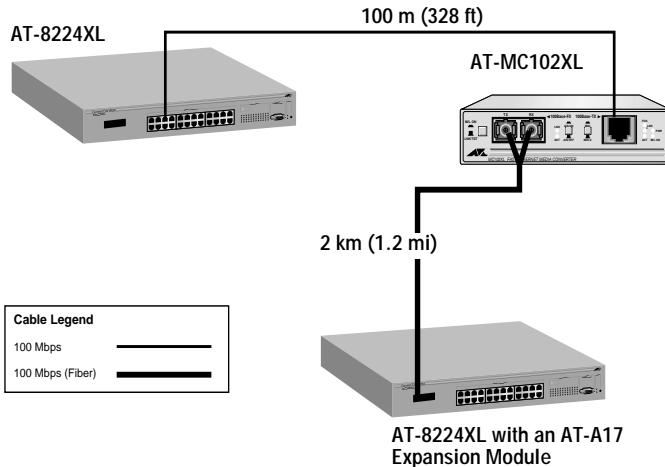


Figure 3 Standalone Topology

Back-to-Back Topology

Figure 4 illustrates two media converters in a back-to-back configuration.

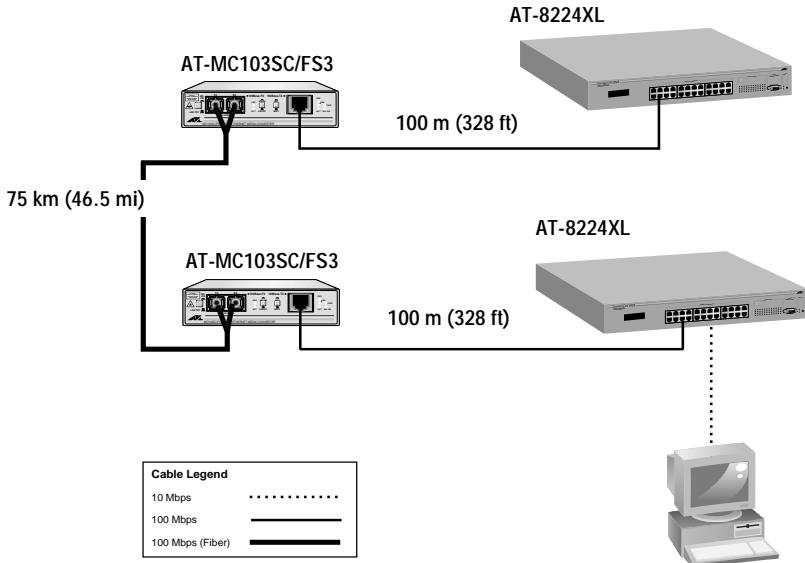


Figure 4 Back-to-Back Topology

Chapter 2

Installing the Media Converter

Verifying the Package Contents

Make sure the following items are included in your package. If any item is missing or damaged, contact your Allied Telesyn sales representative for assistance.

- One AT-MC100 Series Fast Ethernet Media Converter
- Four protective feet (for desktop use only)
- An external AC/DC power adapter
- This installation guide
- Warranty card

Planning the Installation

Be sure to observe the following guidelines when planning the installation of your media converter.

- The end-nodes connected to the media converter must operate at 100 Mbps.
- The two end-nodes connected to the ports of the media converter must operate with the same duplex mode, either half- or full-duplex. The media converter itself can operate in either mode.
- The devices connected to the two ports on the media converter can be a network adapter card, repeater, switch, or router.
- Refer to Table 3, Table 4, and Table 5 for the twisted pair and fiber optic port specifications.

Table 3 100Base-TX Twisted Pair Port Cabling Specifications

Cable Type	Maximum Operating Distance
Shielded or unshielded Category 5 or better	100 m (328 ft)

Table 4 100Base-FX Fiber Optic Port Specifications (Full-duplex)

Model	Type of Fiber Optic Cable	Maximum Operating Distance	Maximum Allowable Loss Budget
AT-MC101XL	50/125 or 62.5/125 micron multimode	2 km (1.2 mi)	13 dB at 1310 nm
AT-MC102XL	50/125 or 62.5/125 micron multimode	2 km (1.2 mi)	13 dB at 1310 nm
AT-MC103XL	9/125 micron single-mode	15 km (9.3 mi)	16 dB at 1310 nm
AT-MC103LH	9/125 micron single-mode	40 km (24.8 mi)	16 dB at 1310 nm
AT-MC103SC/FS3	9/125 micron single-mode	75 km (46.5 mi) ¹	33 dB at 1310 nm
AT-MC103ST/FS3	9/125 micron single-mode	75 km (46.5 mi) ¹	33 dB at 1310 nm
AT-MC103SC/FS4	9/125 micron single-mode	100 km (62 mi) ²	34 dB at 1550 nm
AT-MC103ST/FS4	9/125 micron single-mode	100 km (62 mi) ²	34 dB at 1550 nm

1. The media converter has a minimum operating distance of 15 km (9.4 mi). This is to prevent blinding or burning out of the optical receiver on the far-end-node.
2. The media converter has a minimum operating distance of 40 km (24.8 mi). This is to prevent blinding or burning out of the optical receiver on the far-end-node.

Table 5 100Base-FX Fiber Optic Port (Half-duplex)¹

Number of Media Converters	Connected Devices	Maximum Operating Distance
One Media Converter Inline	Switch to Switch	372 m (1,221 ft)
	Workstation to Switch	372 m (1,221 ft)
	Switch to Class I Repeater	137 m (450 ft)
	Switch to Class II Repeater	185 m (607 ft)
Two Media Converters Inline	Switch to Switch	332 m (1,089 ft)
	Workstation to Switch	332 m (1,089 ft)
	Switch to Class I Repeater	97 m (318 ft)
	Switch to Class II Repeater	145 m (476 ft)

1. The total distance of all fiber lengths cannot exceed the limits stated in the table. Each media converter used inline within a single collision domain reduces the overall segment length by 40 meters (131 feet).

Reviewing Safety Precautions

Please review the following safety guidelines before installing the media converter.



Warning

Class 1 laser product. 6



Warning

Do not stare into the laser beam. 7



Warning

Lightning Danger: Do not work on equipment or cables during periods of lightening activity. 8



Caution

Do not block air vents. 9



Caution

Power to the hub must be sourced only from the adapter. 10



Caution

Operating Temperature: This product is designed for a maximum ambient temperature of 40°C. 11



Caution

All Countries: Install this product in accordance with local and National Electric Codes. [ANSI 12](#)

Installing the Media Converter

The following procedure explains how to install an AT-MC100 Series Media Converter.

To install the media converter, perform the following procedure:

1. Remove all equipment from the package and store the packaging material in a safe place.

Note

Do not remove the dust cover from the fiber optic port until you are ready to connect the fiber optic cable. Dust contamination can adversely impact the operating performance of the port on the media converter.

2. If you are installing the media converter in an AT-MCR12 chassis, refer to the chassis's installation guide for instructions on how to install the unit, then proceed to Step 5.
3. Place the media converter on a flat, secure surface (such as a desk or table) leaving ample space around the unit for ventilation.
4. Attach the four protective rubber feet to the bottom of the media converter. See Figure 5. **Do not attach the protective feet if you are installing the unit in an AT-MCR12 chassis.**

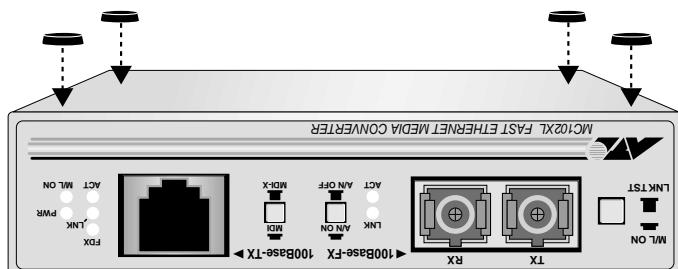


Figure 5 Attaching the Protective Feet

5. Set the Link Test/MissingLink button to LNK TST (OUT) position.
6. Set the auto-negotiation feature as follows:
 - If both end-nodes will use auto-negotiation to determine the duplex mode, or if both are pre-set to operate with the same duplex mode, such as half-duplex, set the switch to the A/N ON (IN) position. This is the default setting.
 - If one end-node is capable of operating at only half-duplex mode while the other node will determine its duplex mode through auto-negotiation, set the switch to the A/N OFF (OUT) position.
7. Plug the AC/DC power adapter into an appropriate AC power outlet and insert the power plug into the DC receptacle located on the back of the unit. Refer to Figure 6. **This step does not apply if you installed the unit in an AT-MCR12 chassis.**

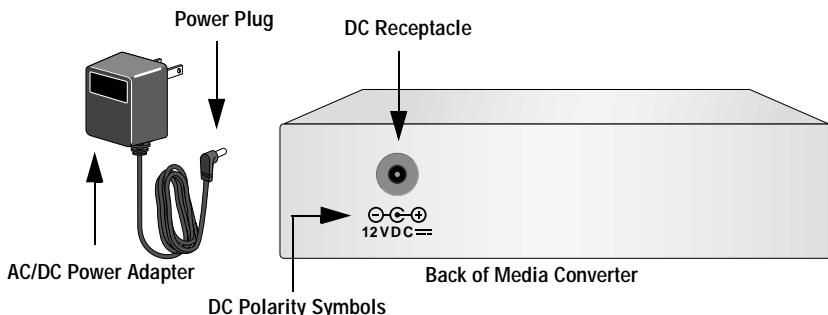


Figure 6 12 V DC Connector on Rear Panel

8. Verify that the PWR LED is green. If the LED is OFF, refer to "Troubleshooting" on page 15.
9. Remove the dust cover from the fiber optic connector and connect the cable to the fiber optic port. Verify that the media converter's transmitter port (TX) is connected to the end-node's receiver port (RX) and that the media converter's receiver port (RX) is connected to the end-node's transmitter port (TX).
10. Connect the twisted pair cable to the twisted pair port.

Note

End-nodes connected to the media converter must operate with the same duplex mode, either both full-duplex or both half-duplex.

11. Set the MDI/MDI-X button as follows:

- If you are connecting a workstation to the 100Base-TX port, set the MDI/MDI-X button to the **MDI-X** (OUT) position. MDI-X is the default position.
- If you are connecting a hub or a switch to the 100Base-TX port, set the MDI/MDI-X switch to the **MDI** (IN) position.

Note

After using the MDI/MDI-X button to change between the two settings, you must reset the media converter by powering OFF then powering ON the unit.

12. Power ON the end-nodes.

The media converter is now ready for use.

Warranty Registration

When you finish installing the product, you should register your product by completing the enclosed warranty card and sending it in.

Chapter 3

Troubleshooting

Troubleshooting Guidelines

Follow the guidelines below to test and troubleshoot the installation in the event a problem occurs.

If the PWR LED is OFF, do the following:

- ❑ If the unit is installed on a desktop, check to be sure that the power adapter is securely connected to a power outlet and that the power adapter cable is securely connected to the back of the media converter.
- ❑ If the unit is installed in an AT-MCR12 chassis, check that the unit is fully seated in the slot.
- ❑ Verify that the power outlet has power by connecting another device to it.
- ❑ Try using another power adapter of the same type that came with your media converter.

If the LNK LED for the twisted pair port is OFF, do the following:

- ❑ Check that the end-node connected to the port is powered ON and is operating properly.
- ❑ Check that the twisted pair cable is securely connected to the twisted pair port on the media converter and on the remote end-node.
- ❑ Make sure that the twisted pair cable does not exceed 100 meters (328 feet) and that you are using Category 5 or better.
- ❑ Verify that both end-nodes connected to the media converter are operating at the same speed. Both must be operating at either 100 Mbps.
- ❑ Make sure no configuration changes have been made. If so, you must reset the media converter by powering OFF and then powering ON the unit.

If the LNK LED for the fiber optic port is OFF, do the following:

- Verify that the end-node connected to the port is ON and is operating properly.
- Check that the fiber optic cable is securely connected to the fiber optic port on the media converter and on the end-node.
- Verify that the end-nodes connected to the media converter are operating at the same speed. Both must be operating at 100 Mbps.
- Make sure that the cable connected to the media converter's receiver port (RX) is connected to the end-node's transmitter port (TX) and that the media converter's transmitter port (TX) is connected to the end-node's receiver port (RX).
- Make sure no configuration changes have been made. If so, you must reset the media converter by powering OFF then powering ON the unit.
- Test the attenuation on the fiber optic cable to ensure that it does not exceed acceptable values. Refer to "Fiber Optic Port Specifications" on page 20 for more information.
- Verify that you are using the appropriate type of fiber optic cable and that you have not exceeded the maximum operating distance. For maximum operating distances, refer to Table 1 on page 2. For cable types, refer to "Fiber Optic Port Specifications" on page 20.
- Check that the operating specifications (e.g., wavelength and maximum operating distance) of the fiber optic port on the end-node are compatible with the operating specifications of the fiber optic port on the media converter. Refer to "Fiber Optic Port Specifications" on page 20 for more information.

If there is a communication problem between the end-nodes connected to the media converter, do the following:

- Verify that both end-nodes are operating with the same duplex mode.

If you are still experiencing problems after testing and troubleshooting the installation, refer to "Contacting Allied Telesyn Technical Support" on page x or visit our web site at **www.alliedtelesyn.com** for support information.

Loopback Test

To check hardware reliability of the media converter, perform the following procedure:

1. Power OFF the media converter by unplugging the power adapter from the wall outlet and from the back of the unit.
2. Connect the RJ-45 twisted pair port to a 100Base port on the end-node and power ON the end-node.
3. Set the MDI/MDI-X button as follows:
 - If you are connecting a workstation to the 100Base port, set the MDI/MDI-X button to the **MDI-X** (OUT) position. MDI-X is the default position.
 - If you are connecting a hub or a switch to the 100Base port, set the MDI/MDI-X switch to the **MDI** (IN) position.
4. Using a tested and good fiber patch cable, attach the matching ends of the fiber cable to the transmit (TX) and receive (RX) connectors of the media converter.
5. Set the media converter to the LNK TST(OUT) position.
6. Power ON the media converter.
7. Verify that the LNK LED on both the twisted pair and fiber optic ports are green.
 - If the LEDs are green, the unit is working properly and there is a problem elsewhere on the segment.
 - If the LEDs are OFF, contact Allied Telesyn Technical Support for a RMA number to replace the unit. Refer to "Returning Products" on page xi for more information. You can also find RMA information by accessing the Knowledge Base at <http://kb.alliedtelesyn.com>.

Appendix A

Technical Specifications

Physical

Dimensions:	W x D x H 10.5 cm x 9.5 cm x 2.5 cm (4.125 in x 3.75 in x 1.0 in)
Weight:	0.27 kg (0.60 lbs)

Environmental

Maximum Operating Temperature:	0° C to 40° C (32° F to 104° F)
Maximum Storage Temperature:	-20° C to 60° C (-4° F to 140° F)
Operating and Storage Altitude:	Up to 3,048 meters (10,000 feet)
Relative Humidity Operating and Storage:	5% to 95% (non-condensing)

Electrical Rating

Input Supply Voltage:	12V DC ± 5%
Maximum Current:	500 mA
Power Consumption:	6W

Agency Certifications

EMI/RFI:	FCC Class B, EN55022 Class B, VCCI Class B
Electrical Safety:	EN60950 (TUV), UL1950 (_c UL _{us}), CE Compliant
Immunity:	EN55024 VCCI Class B

Fiber Optic Port Specifications

Table 6 through Table 9 lists the specifications for the 100Base-FX fiber optic port.

Table 6 Fiber Optic Transmitter

Model	Fiber Type ¹	Fiber Optic Diameter (microns)	Optical Wavelength	Launch Power (dBm) ²		
				Max.	Avg.	Min.
AT-MC101XL and AT-MC102XL	MMF	50/125	1310 nm	-14.0	-20.3	-22.5
	MMF	62.5/125	1310 nm	-14.0	-16.8	-19.0
AT-MC103XL	SMF	9/125	1310 nm	-8.0	-11.5	-15.0
AT-MC103LH	SMF	9/125	1310 nm	0.0	-3.0	-5.0
AT-MC103SC/FS3 and AT-MC103ST/FS3	SMF	9/125	1310 nm	0.0	-2.0	-4.0
AT-MC103SC/FS4 and AT-MC103ST/FS4	SMF	9/125	1550 nm	0.0	-1.5	-3.0

1. MMF = Multimode Fiber / SMF = Single-mode Fiber
2. The launch power is measured at one meter from the transmitter.

Table 7 Fiber Optic Receiver

Model	Fiber Type ¹	Fiber Optic Diameter (microns)	Optical Wavelength	Receive Power (dBm)		
				Min.	Typical	Saturation
AT-MC101XL and AT-MC102XL	MMF	50/125 or 62.5/125	1310 nm	-31.8	-34.5	-14.0
AT-MC103XL	SMF	9/125	1310 nm	-31.0	-31.0	-8.0
AT-MC103LH	SMF	9/125	1310 nm	-35.0	-38.0	0.0
AT-MC103SC/FS3 and AT-MC103ST/FS3	SMF	9/125	1310 nm	-37.0	-37.0	-3.0
AT-MC103SC/FS4 and AT-MC103ST/FS4	SMF	9/125	1550 nm	-37.0	-37.0	-3.0

1. MMF = Multimode Fiber / SMF = Single-mode Fiber

Table 8 Fiber Optic Datalink

Model	Fiber Type ¹	Minimum Power / Link Budget	Average Signal Loss	Minimum Distance Spec. ²	Maximum Distance Spec.
AT-MC101XL and AT-MC102XL	50/125 MMF	13.00 dB	18.70 dB	0	2 km (1.2 mi)
	62.5/125 MMF	16.80 dB	22.50 dB	0	2 km (1.2 mi)
AT-MC103XL	9/125 SMF	16.00 dB	19.50 dB	0	15 km (9.4 mi)
AT-MC103LH	9/125 SMF	30.00 dB	35.00 dB	0	40 km (24.8 mi)

Table 8 Fiber Optic Datalink (*Continued*)

Model	Fiber Type ¹	Minimum Power / Link Budget	Average Signal Loss	Minimum Distance Spec. ²	Maximum Distance Spec.
AT-MC103SC/FS3 and AT-MC103ST/FS3	9/125 SMF	33.00 dB	35.00 dB	15 km (9.4 mi)	75 km (46.5 mi)
AT-MC103SC/FS4 and AT-MC103ST/FS4	9/125 SMF	34.00 dB	35.50 dB	40 km (24.8 mi)	100 km (62 mi)

1. MMF = Multimode Fiber / SMF = Single-mode Fiber

2. The recommended minimum range is stated in all cases where the maximum transmitter output power exceeds the receivers saturation level. This is to prevent blinding or burning out of the optical receiver on the far-end-node.

Table 9 Fiber Optic Loss Specifications (Benchmarks)

Fiber Type ¹	Fiber Optic Diameter (microns)	Optical Wavelength	Typical Loss Factor (dB/km)	Worst Case Loss Factor (dB/km)	Bandwidth (Mhz-km)
MMF	50/125	850 nm	3.00	3.50	400
	50/125	1310 nm	1.00	1.50	400
	62.5/125	850 nm	3.00	3.75	200
	62.5/125	1310 nm	1.00	1.50	500
	100/140	850 nm	4.00	4.00	100
SMF	9/125	1310 nm	0.40	1.00	N/A
	9/125	1550 nm	0.30	0.75	N/A

1. MMF = Multimode Fiber / SMF = Single-mode Fiber

Appendix B

Translated Electrical Safety and Emission Information

Important: This appendix contains multiple-language translations for the safety statements in this guide.

Wichtig: Dieser Anhang enthält Übersetzungen der in diesem Handbuch enthaltenen Sicherheitshinweise in mehreren Sprachen.

Vigtigt: Dette tillæg indeholder oversættelser i flere sprog af sikkerhedsadvarslerne i denne håndbog.

Belangrijk: Deze appendix bevat vertalingen in meerdere talen van de veiligheidsopmerkingen in deze gids.

Important: Cette annexe contient la traduction en plusieurs langues des instructions de sécurité figurant dans ce guide.

Tärkeää: Tämä liite sisältää tässä oppaassa esiintyvät turvaohjeet usealla kielellä.

Importante: questa appendice contiene traduzioni in più lingue degli avvisi di sicurezza di questa guida.

Viktig: Dette tillegget inneholder oversættelser til flere språk av sikkerhetsinformasjonen i denne veiledningen.

Importante: Este anexo contém traduções em vários idiomas das advertências de segurança neste guia.

Importante: Este apéndice contiene traducciones en múltiples idiomas de los mensajes de seguridad incluidos en esta guía.

Obs! Denna bilaga innehåller flerspråkiga översättningar av säkerhetsmeddelandena i denna handledning.

Standards: This product meets the following standards.

U.S. Federal Communications Commission	
Declaration Of Conformity	
Manufacture Name:	Allied Telesyn, Inc.
Manufacture Address:	960 Stewart Drive, Suite B Sunnyvale, CA 94086 USA
Manufacture Telephone:	408-730-0950
Declares that the Product:	Fast Ethernet Media Converters
Model Numbers:	AT-MC101XL, AT-MC102XL, AT-MC103XL, AT-MC103LH, AT-MC103SC/FS3, AT-MC103ST/FS3 AT-MC103SC/FS4, AT-MC103ST/FS4
This product complies with FCC Part 15B, Class B Limits:	
This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device must not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.	
Radiated Energy	
Note: This equipment has been tested and found to comply with the limits for a Class B digital device pursuant to Part 15 of FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with instructions, may cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on; the user is encouraged to try to correct the interference by one or more of the following measures:	
<ul style="list-style-type: none">- Reorient or relocate the receiving antenna.- Increase the separation between the equipment and the receiver.- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.- Consult the dealer or an experienced radio/TV technician for help.	
Changes and modifications not expressly approved by the manufacturer or registrant of this equipment can void your authority to operate this equipment under Federal Communications Commission rules.	
Warning: This product requires only Category 3, 4, or 5 shielded twisted pair cable for all 10 Mbps RJ-45 connections, and Category 5 shielded twisted-pair for all 100 Mbps RJ-45 connections to comply with Class B emission limits. If not used with shielded cables, this product may cause radio interference in which case the user may be required to take adequate measures to reduce interference levels.	

Industry Canada

This Class B digital apparatus meets all requirements of the Canadian Interference-Causing Equipment Regulations.

Cet appareil numérique de la classe B respecte toutes les exigences du Règlement sur le matériel brouilleur du Canada.

~~ 1	RFI Emission	EN55022 Class B
~~ 2	Immunity	EN50082-1 1997
~~ 3	Warning: This product requires shielded cables to comply with emission and immunity standards. If it is used with unshielded cables, the user may be required to take measures to correct the interference problem at their own expense.	
~~ 4	Electrical Safety	EN60950 (TUV), UL1950 (_c UL _{us})
Safety		
~~ 5	 Laser	EN60825
~~ 6	 Warning: Class 1 Laser product.	
~~ 7	 Warning: Do not stare into the Laser beam.	
<p>At time of installation, the Fiber Optic Lasers comply with FDA Radiation Performance Standard 21CFR Subchapter J, applicable at date of manufacture. Use of controls or adjustments of performance or procedures other than those specified herein may result in hazardous radiation exposure.</p>		
~~ 8	 Lightning Danger	Danger: Do not work on equipment or cables during periods of lightning activity.
~~ 9	 Do not block air vents	
~~ 10	Power to the hub must be sourced only from the adapter.	
USA/Canada		
Use a UL Listed/CSA Certified AC adapter of DC 12V, 500mA.		
Europe - EU		
Use TÜV licensed AC adapter of DC 12V, 500mA.		
UK		
Use a UK Safety Approved AC adapter of DC 12V, minimum 500mA.		
~~ 11	 Operating Temperature:	This product is designed for a maximum ambient temperature of 40 degrees C.

☞ 12  **All Countries:** Install product in accordance with local and National Electrical Codes.

Normen: Dieses Produkt erfüllt die Anforderungen der nachfolgenden Normen.

☞ 1 **Hochfrequenzstörung** EN55022 Klasse B

☞ 2 **Störsicherheit** EN50082-1 1997

☞ 3 **Achtung:** Für dieses Produkt sind abgeschirmte Kabel erforderlich, damit den Richtlinien für Emission und Interferenzschutz entsprochen wird. Falls das Produkt mit nicht abgeschirmten Kabeln verwendet wird, können weitergehende Maßnahmen für die Korrektur von Interferenzproblemen auf Kosten des Benutzers notwendig werden.

☞ 4 **Elektrische Sicherheit** EN60950 (TUV), UL1950 (_cUL_{us})

Sicherheit

☞ 5  **Laser** EN60825

☞ 6  **Warnung:** Laserprodukt der Klasse 1.

☞ 7  **Warnung:** Nicht direkt in den Strahl blicken.

☞ 8  **Gefahr Durch Blitzschlag**
Gefahr: Keine Arbeiten am Gerät oder an den Kabeln während eines Gewitters ausführen

☞ 9  Entlüftungsöffnungen nicht versperren

☞ 10  Der Buchse darf nur aus dem Adapter Strom zugeführt werden.

Europe - EU
Gebrauchen Sie einen von TÜV zugelassenen Wechselstromadapter für Gleichstrom 12 V, 500 mA.

☞ 11  **Betriebstemperatur:** Dieses Produkt wurde für den Betrieb in einer Umgebungstemperatur von nicht mehr als 40° C entworfen.

☞ 12  **Alle Länder:** Installation muß örtlichen und nationalen elektrischen Vorschriften entsprechen.

Standarder: Dette produkt tilfredsstiller de følgende standarder.

- ~ 1 **Radiofrekvens forstyrrelsesemission** EN55022 Klasse B
- ~ 2 **Immunitet** EN50082-1 1997
- ~ 3 **Advarsel:** Dette produkt skal bruges med afskærmede kabler for at overholde bestemmelserne vedrørende udstråling og støjimmunitet. Hvis det bruges med uafskærmede kabler, kan det blive påkrævet af brugeren at korrigere interferensproblemer for egen regning.

- ~ 4 **Elektrisk sikkerhed.** EN60950 (TUV), UL1950 (_cUL_{us})

Sikkerhed

- ~ 5  **Laser** EN60825
- ~ 6  **Advarsel:** Laserprodukt av klasse 1.
- ~ 7  **Advarsel:** Stirr ikke på strålen.
- ~ 8  **Fare Under Uvejr**
Fare: Undlad at arbejde på udstyr eller kabler i perioder med lynaktivitet.
- ~ 9  Ventilationsåbningerne må ikke blokeres
- ~ 10  Strømforsyningen til apparatet må udelukkende tages fra tilpasningstransformatoren.

Europe - EU

Brug kun TÜV godkendt vekselstrømstransformator på 12 V jævnstrøm, 500 mA.

- ~ 11  **Betjeningstemperatur:** Dette apparat er konstrueret til en omgivende temperatur på maksimum 40 grader C.
- ~ 12  **Alle Lande:** Installation af produktet skal ske i overensstemmelse med lokal og national lovgivning for elektriske installationer.

Eisen: Dit product voldoet aan de volgende eisen.

- ~ 1 **RFI Emissie** EN55022 Klasse B
- ~ 2 **Immunititeit** EN50082-1 1997
- ~ 3 **Waarschuwing:** Om te voldoen aan de emissie- en immuniteitsnormen dient dit apparaat te zijn voorzien van afgeschermd kabels. Als het met niet-afgeschermd kabels wordt gebruikt, kan het zijn dat de gebruiker maatregelen moet treffen om interferentieproblemen voor eigen rekening op te lossen.
- ~ 4 **Electrische Veiligheid** EN60950 (TUV), UL1950 ($c\text{UL}_{us}$)
 - Veiligheid**
 - ~ 5  **Laser** EN60825
 - ~ 6  **Waarshuwing:** Klasse-1 laser produkt.
 - ~ 7  **Waarchuwing:** Niet in de straal staren.
 - ~ 8  **Gevaar Voor Blikseminslag**
Gevaar: Niet aan toestellen of kabels werken bij bliksem.
 - ~ 9  Ventilatiegaten niet blokkeren
 - ~ 10  Stroom mag alleen via de adapter naar het apparaat toegevoerd worden.
- ~ 11  **Bedrijfstemperatuur:** De omgevingstemperatuur voor dit produkt mag niet meer bedragen dan 40 graden Celsius.
- ~ 12  **Alle Landen:** het toestel installeren overeenkomstig de lokale en nationale elektrische voorschriften.

Normes: ce produit est conforme aux normes de suivantes.

- ~ 1 **Emission d'interférences radioélectriques** EN55022 Classe B
- ~ 2 **Immunité** EN50082 - 1 1997
- ~ 3 **Avertissement:** Il faut utiliser des câbles blindés pour ce produit afin de respecter les normes d'émission et d'immunité. Si l'utilisateur choisit d'utiliser des câbles non blindés, il sera peut-être contraint de prendre les mesures nécessaires pour corriger les problèmes d'interférences, ainsi que d'assumer le coût correspondant.

- ~ 4 **Sécurité Électrique** EN60950 (TUV), UL1950 (_cUL_{us})

Sécurité

- ~ 5  **Laser** EN60825
- ~ 6  **Attention** Produit laser di classe 1.
- ~ 7  **Attention** Ne pas fixer le faisceau des yeux.
- ~ 8  **Danger De Foudre**
Danger: Ne pas manier le matériel ou les câbles lors d'activité orageuse.
- ~ 9  Ne pas bloquer les fentes d'aération
- ~ 10  L'alimentation du concentrateur doit être uniquement fournie par l'adaptateur.

Europe - EU

Utiliser un adaptateur secteur conforme TÜV de 12 V, 500 mA en courant continu.

- ~ 11  **Température De Fonctionnement:** Ce matériel est capable de tolérer une température ambiante maximum de 40 degrés Celsius.
- ~ 12  **Pour Tous Pays:** Installer le matériel conformément aux normes électriques nationales et locales.

Standardit: Tämä tuote on seuraavien standardien mukainen.

- ~ 1 **Radioaaltojen häirintä** EN55022 Luokka B
- ~ 2 **Kestävyys** EN50082-1 1997
- ~ 3 **Varoitus:** Tämä tuote vaatii suojattuja kaapeleita toimiakseen emissio- ja häiriönsietostandardien mukaisesti. Jostuotetta käytetään ilman suojattuja kaapeleita, käyttäjä voi joutua korjaamaan häirinnän aiheuttaman ongelman omallakustannuksellaan.

- ~ 4 **Sähköturvallisuus** EN60950 (TUV), UL1950 (_cUL_{us})

Turvallisuus

- ~ 5  **Laser** EN60825
- ~ 6  **Varoitus:** Luokan 1 Lasertuote.
- ~ 7  **Variotus:** Älä katso sääteeseen.
- ~ 8  **Salamaniskuvaara**
Engenvaara: Älä työskentele laitteiden tai kaapeleiden kanssa salamoinnin aikana.
- ~ 9  Älä tuki ilmareikiä
- ~ 10  Tähtipisteeseen (hub) syöttävän virran pitää tulla ainoastaan sovitimesta.

Europe - EU

Käytä TÜV-lisenssillä valmistettua verkkosovitinta, jonka tasajännitteen nimellisarvot ovat DC 12 V, 500 mA (milliampeeria).

- ~ 11  **Käyttölämpötila:** Tämä tuote on suunniteltu ympäröivän ilman maksimilämpötilalle 40° C.
- ~ 12  **Kaikki Maat:** Asenna tuote paikallisten ja kansallisten sähköturvallisuusmääräysten mukaisesti.

Standard: Questo prodotto è conforme ai seguenti standard.

- ~ 1 **Emissione RFI (interferenza di radiofrequenza)** EN55022 Classe B
- ~ 2 **Immunità** EN50082-1 1997
- ~ 3 **Avvertenza:** questo prodotto, se utilizzato con cavi schermati, è conforme alle norme sulle emissioni e sull'immunità. In caso di uso senza cavi schermati, l'utente può dover adottare a proprie spese misure correttive contro le interferenze.
- ~ 4 **Sicurezza Elettrica** EN60950 (TUV), UL1950 (cUL_{us})
Norme Di Sicurezza
- ~ 5  **Laser** EN60825
- ~ 6  **Avvertenza:** Prodotto laser di Classe 1.
- ~ 7  **Avertenza:** Non fissare il raggio con gli occhi.
- ~ 8  **Pericolo Di Fulmini**
Pericolo: Non lavorare sul dispositivo o sui cavi durante precipitazioni temporalesche.
- ~ 9  Non ostruire le prese d'aria
- ~ 10  Questo dispositivo deve essere alimentato solo mediante l'adattatore.

Europe - EU
Utilizzare l'adattatore per c.a. da 12 V c.c. e 500 mA conforme alla normativa TÜV.
- ~ 11  **Temperatura Di Funzionamento:** Questo prodotto è concepito per una temperatura ambientale massima di 40 gradi centigradi.
- ~ 12  **Tutti I Paesi:** installare il prodotto in conformità delle vigenti normative elettriche nazionali.

Sikkerhetsnормer: Dette produktet tilfredsstiller følgende sikkerhetsnormer.

- ~~ 1 **RFI stråling** EN55022 Klasse B
- ~~ 2 **Immunitet** EN50082-1 1997
- ~~ 3 **Advarsel:** Dette produktet må brukes med vernede kabler for å tilfredsstille emisjons- og fritakelsesstandarder. Dersom produktet brukes med uvernedede kabler, må brukeren muligens rette forstyrrelsесproblemene for egen regning.
- ~~ 4 **Elektrisk sikkerhet** EN60950 (TUV), UL1950 (_cUL_{us})

Sikkerhet

- ~~ 5  **Laser** EN60825
- ~~ 6  **Advarsel:** Laserprodukt av klasse 1.
- ~~ 7  **Advarsal:** Stirr ikke på strålen.
- ~~ 8  **Fare For Lynnedslag**
Fare: Arbeid ikke på utstyr eller kabler i tordenvær.
- ~~ 9  Blokker ikke luftventilene
- ~~ 10  All strømtilførsel må komme fra adapteren.

Europe - EU
Benytt TÜV-godkjent AC-adapter på 12V DC, 500mA (millismpere)

- ~~ 11  **Driftstemperatur:** Dette produktet er konstruert for bruk i maksimum romtemperatur på 40 grader celsius.
- ~~ 12  **Alle Land:** Produktet må installeres i samsvar med de lokale og nasjonale elektriske koder.

Padrões: Este produto atende aos seguintes padrões.

- ~ 1 **Emissão De Interferência De Radiofrequênci a** EN55022 Classe B
- ~ 2 **Imunidade** EN50082-1 1997
- ~ 3 **Advertência:** Este produto requer a utilização de cabos blindados para cumprimento dos standards de limites de emissão e imunidade. Se o produto for utilizado com cabos não blindados, o utilizador poderá necessitar de tomar medidas para correcção de problemas de interferência, por sua própria conta.
- ~ 4 **Segurança Eléctrica** EN60950 (TUV), UL1950 (_cUL_{us})

Segurança

- ~ 5  **Laser** EN60825
- ~ 6  **Aviso** Produto laser de classe 1.
- ~ 7  **Aviso** Não olhe fixamente para o raio.
- ~ 8  **Perigo De Choque Causado Por Raio**
Perigo: Não trabalhe no equipamento ou nos cabos durante períodos suscetíveis a quedas de raio.
- ~ 9  Não bloquee as aberturas de ventilação
- ~ 10  Use somente o adaptador fornecido para alimentação elétrica do hub.

Europe - EU

Use um adaptador de corrente alternada com saída DC de 12V e 500mA em conformidade com as especificações da TÜV.

- ~ 11  **Temperatura De Funcionamento:** Este produto foi projetado para uma temperatura ambiente máxima de 40 graus centígrados.
- ~ 12  **Todos Os Países:** Instale o produto de acordo com as normas nacionais e locais para instalações elétricas.

Estándares: Este producto cumple con los siguientes estándares.

- ~ 1 **Emisión RFI** EN55022 Clase B
- ~ 2 **Inmunidad** EN50082-1 1997
- ~ 3 **Advertencia:** Este producto exige cables protectores para ajustarse a las normas de emisión e inmunidad. Si se utiliza con cables sin protección, el usuario tendrá que correr con los gastos por las medidas a tomar en caso de problemas de interferencias.

- ~ 4 **Seguridad Eléctrica** EN60950 (TUV), UL1950 (_cUL_{us})

Seguridad

- ~ 5  **Laser** EN60825
- ~ 6  **¡Advertencia!** Producto láser Clase 1.
- ~ 7  **¡Advertencia!** No mirat fijamente el haz.
- ~ 8  **Peligro De Rayos**
Eligro: No realice ningun tipo de trabajo o conexion en los equipos o en los cables durantetormentas electricas.
- ~ 9  No bloquee las aberturas para ventilacion
- ~ 10  La energía para el dispositivo central o "hub" debe provenir únicamente del adaptador.

Europe - EU

Utilizar un adaptador de corriente alterna autorizado TÜV de 12 voltios de corriente continua y 500 miliamperios.

- ~ 11  **Temperatura Requerida Para La Operación:** Este producto está diseñado para una temperatura ambiental máxima de 40 grados C.
- ~ 12  **Para Todos Los Países:** Monte el producto de acuerdo con los Códigos Eléctricos locales y nacionales.

Standarder: Denna produkt uppfyller följande standarder.

~~ 1	Radiostörning	EN55022 Klass B
~~ 2	Immunitet	EN50082-1 1997
~~ 3	Varng! Denna produkt kräver skärmade kablar för att uppfylla standardkraven för emission och immunitet. Om den används med oskärmade kablar kan användaren vara tvungen att vidta åtgärder på egen bekostnad för att åtgärda störningsproblemet.	
~~ 4	Elsäkerhet	EN60950 (TUV), UL1950 (_c UL _{us})

Säkerhet

~~ 5	 Laser	EN60825
~~ 6	 Varng! Laserprodukt av klass 1.	
~~ 7	 Varng! Laserstrålning när enheten är öppen.	
~~ 8	 Fara För Blixtnedslag Fara: arbeta ej på utrustningen eller kablarna vid åskväder.	
~~ 9	 Blockera inte luftventilerna	
~~ 10	 Endast anslutningsenheten får vara kraftkälla till centralen.	
Europe - EU Använd en växelströmsanslutningsenhet licensierad av TÜV. Likström 12V, 500mA.		
~~ 11	 Driftstemperatur: Denna produkt är konstruerad för rumstemperatur ej överstigande 40 grader Celsius.	
~~ 12	 Alla Länder: Installera produkten i enlighet med lokala och statliga bestämmelser för elektrisk utrustning.	

